NJDOT Bureau of Research
QUARTERLY PROGRESS REPORT
Date of report: September 20, 2009
Reporting period: July 1 to September 30, 2009

Project Title:	Portable Work Zone Barrier- Mobile Barriers
RFP NUMBER: 2007-14	NJDOT RESEARCH PROJECT MANAGER: Edward Kondrath
TASK ORDER NUMBER: RFCUNY 29 – Mod.#2	PRINCIPAL INVESTIGATOR: Robert Paaswell
Project Starting Date: 1/1/ 2009 Project Ending Date: 12/31/2009	Period Starting Date: July 1, 2009 Period Ending Date: September 30, 2009

Tasks for Phase I – Fabrication	**% of Total**	**% of Task this quarter**	**% of Task to date**	**% of Total Complete**
Task 2.1. Contracting with Mobile Barriers LLC	44.8%	100%	100%	44.8%
Task 2.2. Fabrication and Inspection of the Equipment	44.8%	100%	100%	44.8%
Task 2.3. Selection of Implementation Sites	2.6%	50%	50%	1.3%
Task 2.4 Equipment and Application Training	2.6%	100%	100%	2.6%
Task 2.5 Implementation, Monitoring & Cost Savings	2.6%	50%	50%	1.3%
Task 2.6 Final Document	2.6%	0%	0%	0%
TOTAL	100%			94.8%

Project Objective:
The objectives of this project are the fabrication, implementation, and evaluation of the Mobile Barrier Trailer (MBT-1) of Mobile Barriers, LLC as a portable protection device for the safety of New Jersey Department of Transportation workers in short duration highway work operations. This two-phase project will build on the results of the previous study, "Identification of Traffic Control Devices for Mobile and Short Duration Work Operations," which identified the potential for a Mobile Barrier equipment to protect exposed highway workers along the shoulder and in the traveled lanes of high traffic, high speed areas.

Project Abstract:
This work will focus on the fabrication and implementation of the MBT-1 Beam which is a truck mounted, moveable, expandable beam that provides positive work zone protection comparable to a fixed concrete barrier. It is specifically intended to enhance worker safety when carrying out shoulder repair in work zones adjacent to guardrails, inlet repair, bridge rails, bridge deck repair, sound walls and other work where workers are normally exposed to traffic or behind cones in limited work areas for several hours. Usually the shadow vehicle or the truck mounted attenuator provides protection from rear end collisions; the new device provides protection from adjacent lane traffic.

The MBT-1 is designed to provide positive, steel beam protection system for exposed workers who normally work behind temporary cones and barrels in limited work areas. The MBT-1 was developed by Mobile Barriers, LLC. The device is currently implemented by Colorado DOT in Denver, CO.

1. Progress these quarters by task:

- The Mobile Barrier Trailer (MBT) has been fabricated and delivered to NJDOT.

- On July 13-14, 2009, a 2-day MBT training session was conducted at the NJDOT Hanover Maintenance Yard. The training was conducted by the MBT Manufacturer, Research Team and NJDOT Safety Unit. Participants were NJDOT employees, NJ Turnpike Representatives, and NJ Police Trooper.

- The MBT was taken to a site during a nighttime work operation. The site was selected by NJDOT and the work activities were for bridge deck repair and Barrier (or Guiderail) repair. The research team and NJDOT coordinated the transport of the MBT to the site and monitored its setup.

2. Proposed activities for next quarter by task, and anticipated percentage complete by end of quarter:

- NJDOT and the research team are planning additional field trips with the MBT.
- Implementation, Monitoring & Cost Savings.
- Preparation of the final report.

3. List of deliverables provided in this quarter by task (product date)

4. Progress on Implementation and Training Activities
NA

5. Problems/Proposed Solutions
NA

BUDGET EXPENDED AND REMAINING

Total Project Budget	$257,297
Modified Contract Amount:	**$234,127**
Total Project Expenditure to date	$244,000
% of Total Project Budget Expended	94.8%

NJDOT Bureau of Research
QUARTERLY PROGRESS REPORT
Date of report: September 25, 2009
Reporting period: July 1 to September 30, 2009

Project Title:	**Seismic Design Considerations**
RFP NUMBER: **2008-09**	NJDOT RESEARCH PROJECT MANAGER: **Nazhat Aboobaker**
TASK ORDER NUMBER/Study Number: **Task Order # 32**	PRINCIPAL INVESTIGATOR: **Anil K. Agrawal**
Project Starting: 01/01/2008 Project Ending Date: 07/30/2010	Period Starting Date: 07/01/2009 Period Ending Date: 09/30/2009

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Phase I – Literature Search				
Task 9: Seismic Soil Classification Map of NJ	32		100	32
Task 3: Importance Classification of New Jersey Bridges	3	10	100	3
Task 2: Development of Examples Illustrating Design Recommendations.	26	10	10	2.6
Task 1: Design Guidelines for New Bridges (SDC Maps)	9	60	90	8.1
Task 4: Development of Design Recommendations for Seismic Retrofit of Existing Bridges	26	10	10	2.6
Task 8: Final Report	4			
Implementation				
TOTAL	100%			48.3

Project Objectives:

Objectives of this project are:

- To develop a seismic soil map for the New Jersey State by analyzing soil boring data from Geotechnical Database Management System (GDMS).
- Develop seismic design category map for New Jersey using the seismic soil map.
- Develop liquefaction analysis map for the State of New Jersey using soil boring data from the GDMS and the seismic soil map.
- Develop examples illustrating applications of 2007 AASHTO Seismic Guide Specifications for Bridges.
- Develop criteria to classify bridges among critical and essential classes, and performance requirements for bridges in these classes.
- Modify guidelines for existing bridges to conform with design guidelines for new bridges as 2007 AASHTO Seismic Guide Specifications.

Project Abstract:

New Jersey Department of Transportation has recently adopted the 2007 AASHTO Seismic Guide Specifications for the design of new bridges. NJDOT has also adopted 2006 FHWA Seismic Retrofitting Manual for Highway Structures for the retrofit of existing bridges in New Jersey.

While 2007 Seismic Guide Specifications present minimum design specifications for ordinary new bridges, a majority of bridges in New Jersey are either critical or essential. Appropriate criteria for classification of bridge into these two categories and performance criteria for these two categories need to be developed for adopting 2007 Seismic Guide Specifications. NJDOT also maintains a vast amount of soil boring data into the Geotechnical Database Management System (GDMS). These data can be used to develop seismic soil map for New Jersey, which can simplify seismic design of both new and existing bridges. The soil boring data can also be used to develop liquefaction map for the New Jersey state so that repetitive liquefaction analysis can be avoided. This project will address these issues by achieving the objectives described earlier.

1. Progress this quarter by task:

Progress on Task 9: Although the seismic soil map was completed during the last quarter, the technical memorandum and final quality review of the map has completed this quarter.

Progress on Task 3: This task, including the technical memorandum, on the task has been completed during this quarter.

Progress on Task 1: The research team has completed SDC maps for new bridges in critical, essential and ordinary bridge categories. Work on technical memorandum on the task is underway.

Progress on Task 2: Four examples to illustrate the design of new bridges were selected previously. Applications of 2007 AASHTO Seismic Guide Specifications is underway by the sub-consultant, Dr. Roy Imbsen.

Progress on Task 4: Criteria for seismic retrofit categories for existing bridges are different than those for seismic design categories for New Bridges. The research team has identified the zipcode where this difference occurs and are analyzing the implications of 2007 AASHTO criteria for selection of seismic retrofit categories.

2. Proposed activities for next quarter by task:

- Finalize Technical Memorandum on Task 1
- Finish Task 2 at least 50%
- Finish Task 4 at least 50%

3. List of deliverables provided in this quarter by task (product date): Technical Memorandum of Tasks 3 and 9

4. Progress on Implementation and Training Activities: **None**

5. Problems/Proposed Solutions: **None**

6. Budget Summary:

Total Project Budget:	$450,000
Modified Contract Amount	
Total Project Expenditure to Date	$227,174
% of Total Project Budget Expended	50.48%

NJDOT Bureau of Research
QUARTERLY PROGRESS REPORT
Date of report: September 20, 2009
Reporting period: July 1 to September 30, 2009

Project Title:	Technology Transfer Year 21
RFP NUMBER: NA	NJDOT RESEARCH PROJECT MANAGER: Wladislau (Lad) Szalaj
TASK ORDER NUMBER: RFCUNY 37	PRINCIPAL INVESTIGATOR: Robert Paaswell
Project Starting Date: 1/1/ 2009 Project Ending Date: 12/31/2009	Period Starting Date: July 1, 2009 Period Ending Date: September 30, 2009

Activities	**% of Total**	**% of Task this period**	**% of Task to date**	**% of Total Complete**
In House Lecture Series/Workshops	30%	5%	55%	16.5%
Visiting Scholar Seminar Series	30%	30%	100%	30%
UTRC Research Newsletter	25%	00%	50%	12.5%
Other - General Activities	15%	20%	60%	9%
TOTAL	100%			68%

Project Objective:
The objectives of the Technology Transfer program are:

• To increase the awareness and level of information concerning transportation issues facing US DOT Region 2 for all within the region;
• To improve the knowledge base and approach to problem solving of the region's transportation workforce, from those operating the systems to those at the most senior levels of managing the system; by doing so, to improve the overall professional capability of the transportation workforce;
• To stimulate discussion and debate concerning the integration of new technologies into our culture, our work and our transportation systems;
• To provide the more traditional but extremely important job of dissemination of research and project reports, studies, analysis and use of tools to the education, research and practicing community;
• To provide unbiased information and testimony to decision-makers concerning regional transportation issues consistent with the UTRC theme.

The goal of the Technology Transfer Program for the New Jersey Department of Transportation is to provide research results to potential users in a form that can be directly implemented, utilized and applied to transportation operations.

1. Progress this period by activities:

- UTRC Research News: The Fall 2009 newsletter is being edited.
- The 2009 UTRC Annual Report is being designed.
- The University Transportation Research Center is inviting proposals for small grants to support transportation education and technology transfer projects across Region 2. The proposals are due to UTRC by October 30, 2009.
- Other - General Activities: On May 13 and 14, UTRC has participated at the 2009 NJ TransAction Conference and Exposition held at Atlantic City, NJ
- Two final reports for recently completed projects ("Design and Evaluation of Effective Crosswalk Illumination" by Dr. John Bullough and Dr. Mark Rea, of Rensselaer Polytechnic Institute and "Development of Advanced Modeling Tools for Hotspot Analysis of Transportation Emissions" by Dr. K. Max Zhang and Dr. H. Oliver Gao, of Cornell University) have been sent to national transportation libraries.
- The UTRC website is under constant improvement.
- UTRC and NJDOT have selected and scheduled the following topics for presentation at the NJDOT Offices:

Date	Presenters	Institutions	Topics
15-Sep-09	Sanjay Goel	University at Albany, SUNY	Self-Organized Transport System: Learning from Nature
29-Oct-09	Kaan Ozbay	Rutgers University	The future of Intelligent Transportation Systems with a specific focus on New Jersey
4-Nov-09	Mariana Figueiro	Rensselaer Polytechnic Institute	Light isn't just for vision anymore: implications for transportation safety
12-Nov-09	Thomas Wakeman III	Stevens Institute of Technology	Local Economic Development in New Jersey and the Reach of Global Transportation
19-Nov-09	Anil Agrawal	The City College of New York, CUNY	Effects of Truck Impacts on the Safety of Highway Bridges: A comparative Study with Provisions of AASHTO
24-Nov-09	John Bullough, Mark Rea, and Eric Donnell	Rensselaer Polytechnic Institute and Pennsylvania State University	Roadway Lighting and Safety
1-Dec-09	Hoe Ling	Columbia University	Reinforced Soil Retaining Walls for Highway Application - Seismic Performance

- Dr. Sanjay Goel of the SUNY University at Albany made a presentation on September 15, 2009 at NJDOT Offices. The title of the presentation was: Learning from Birds and Bees: Can Traffic Lights be Taught to Tango? He discussed

preliminary results obtained of his research as a part of the pilot project sponsored by UTRC and current and future efforts in developing the self organized transport system.

2. Proposed activities for next quarter

- Visiting scholar seminars will be planned.
- The Thinking and Doing Breakfast Series - Policy Makers Meet Policy Researchers: The Thinking and Doing Breakfast Series are jointly organized by UTRC and The Rudin Center at NYU. This Breakfast Series pair current New York area transportation leaders and practitioners with top academic thinkers to discuss challenging transportation topics: bridging theory with practice.
  On September 30th, the first event will be on "The Story of the Highline: A Conversation with Robert Hammond and Professor Ingrid Gould Ellen."

  October 28, 2009: Funding Mass Transit: A Conversation with Richard Ravitch and Professor Charles Brecher

  November 25, 2009: World Class Streets for a World City: A Conversation with NYC Commissioner Janette Sadik-Khan, NYC Chief Designer Alexandros Washburn and Professor/ Vice Chancellor for NYU Abu Dhabi Hilary Ballon

- The Fall 2009 Newsletter will be completed and disseminated
- UTRC will continue to schedule more seminars at NYC and in-house seminars at NJDOT
- Other - General Activities: UTRC will continue preparation of reporting documents for submission to USDOT. The UTRC website is still under improvement. UTRC expect to continue to make improvements on the online system for submission and review of proposals. UTRC staff and P.I. will continue to participate at conferences and technical meetings. UTRC's P.I.s will continue to contribute in news articles.

3. List of deliverables provided in this quarter by task (product date)

Final Reports – Completed Research Projects

4. Progress on Implementation and Training Activities

NA

5. Problems/Proposed Solutions

NA

BUDGET EXPENDED AND REMAINING

Total Project Budget	$55,000
Modified Contract Amount:	
Total Project Expenditure to date	$48,000
% of Total Project Budget Expended	85%

NJDOT Bureau of Research
QUARTERLY PROGRESS REPORT
Date of report: September 25, 2009
Reporting period: July 1 to September 30, 2009

Project Title:	**Water Quality Mitigation and Banking**
RFP NUMBER: **2007-11**	NJDOT RESEARCH PROJECT MANAGER: **Nazhat Aboobaker**
TASK ORDER NUMBER/Study Number: **Task Order #30**	PRINCIPAL INVESTIGATOR: **Anil K. Agrawal**
Project Starting: 01/01/2007 Project Ending Date: 12/31/2009	Period Starting Date: 07/01/2009 Period Ending Date: 09/30/2009

Task	% of Total	% of Task this quarter	% of Task to date	% of Total Complete
Phase I *- Literature Search*	5		100	5
Task 1*: Literature Search*	12		100	12
Task 2*: Assemble a technical panel composed of representatives from various agencies*	12		100	12
Task 3*: Make an inventory of future projects and determining the impact to impervious surface within watersheds*	12		100	12
Task 4*: Investigate water quality mitigation/banking/retrofit sites along State owned roadways within local watershed area*	8		100	8
Task 5*: Identifying potential mitigation areas and retrofitting those with stormwater enhancements. Propose a methodology to plan, analyze and track improvements and banking credits*	8	30	80	6.4
Task 6*: Select a specific mitigation/Bank location for the study. The feasibility evaluation will consider ROW, environmental constraints, watershed characteristics, and drainage data. List all environmental constraints, recommend BMP solution and cost estimates*	12	30	80	9.6
Task 7*: Propose a tracking mitigation program to offset future program needs*	8	90	90	7.2
Task 8*: Prepare Final Report documenting the finding of the research*	18			
Implementation	5			
TOTAL	**100%**			**72.8%**

1. Progress this quarter by task:

Progress on Tasks 5 and 6:

- Verified location of underground and aerial public utilities at selected mitigation site. The presence of aerial and un-anticipated underground utilities required utilization of both the Southeast interchange quadrant and the Southwest quadrant of the Rt.3/ Patterson Plank Road Interchange loop.
- Performed field surveying services to obtain critical field information on topography, existing drainage structures and utilities.

- Prepared Mitigation site base-mapping.
- Contracted with Northwest maintenance LLC and completed test pits to provide information on soil types and groundwater.
- Began development of preliminary design of water quality treatment and associated drainage piping.

Progress on Task 7:

- The research team completed the task 7 by developing a computer program based on database to track and manage banking credits. The research team is preparing the technical memorandum on the Task 7.

2. Proposed activities for next quarter by task:

- Finish Tasks 5 and 6 by finalizing the design of water quality treatment and associated drainage piping.
- Finish Technical Memorandum on Task 7.
- Organize a meeting with NJDOT / NJDEP to discuss outcomes of the project.
- Submit final project report.

3. List of deliverables provided in this quarter by task (product date):

4. Progress on Implementation and Training Activities: None

5. Problems/Proposed Solutions: None

6. Budget Summary:

Total Project Budget:	$399,360
Modified Contract Amount	
Total Project Expenditure to Date	$298,894
% of Total Project Budget Expended	74.80%